The additional species in North Greenland are one species of *Erigeron*, two of *Gnaphalium*, and one of *Artemisia*.

All four members of the chicory family belong to the genus *Taraxacum* of which the dandelion is a member. Of these one has not been found outside of Ellesmere Land and North Greenland, two more are found only there and in arctic America, while the fourth (not found in Ellesmere Land, nor America) is common to Greenland, arctic Europe, and Asia. All four of the arctic dandelions are now represented in the herbarium of the New York Botanical Garden. A few years ago we had only one. Two more were collected by Dr. Wolf and the last one by Dr. Goodsell.

New York Botanical Garden

*(To be continued)*

## NEW COMBINATIONS FROM THE GENUS EUPHORBIA

By J. C. Arthur

The rusts inhabiting the several species of the genus *Euphorbia*, as ordinarily understood, have been variously treated by mycologists. In the recent monograph of the genus *Uromyces* by Sydow, the North American forms having aecia, uredinia and telia are segregated under four species, following the authority of Tranzschel, who in turn based his studies largely upon the published results of cultures made by the writer. In the treatment of this group of rusts in a forthcoming number of the North American Flora, the writer proposes to consider the four species recognized by Sydow as representing "physiological species," or races, belonging to a single species of rust. As these races conform fairly well to the genera into which the genus *Euphorbia* has been segregated, the writer further proposes to use the names of the segregates, rather than list all the hosts, about thirty-five, under the genus *Euphorbia*. A few of these species have not yet been transferred to the segregated genera, and rather than make the transfer of phanerogamic names in a work devoted to fungi, the present method is taken to place the

names on record where phanerogamic botanists may readily find them.

All the changes have the approval of Dr. Charles F. Millspaugh, who has passed upon all my material. His departure some time since upon a trip around the world made it impossible for him to publish the names, or even prepare the article. I am, therefore, assuming the responsibility, and propose the following changes:

**Adenopetalum gramineum** (Jacq.) Arth. *Euphorbia graminea* Jacq. Select Am. 151. 1763.

**Chamaesyce arizonica** (Engelm.) Arth. *Euphorbia arizonica* Engelm. in Torrey, Bot. Mex. Bound. 186. 1858.

**Chamaesyce hirsuta** (Torrey) Arth. *Euphorbia hypericifolia hirsuta* Torrey, Comp. 331. 1826. *E. hirsuta* Wiegand, Bot. Gaz. **24**: 50. 1897.

**Chamaesyce lasiocarpa** (Klotz.) Arth. *Euphorbia lasiocarpa* Klotz. Nov. Act. Nat. Cur. Suppl. **19**: 414. 1843.

**Chamaesyce pilosula** (Engelm.) Arth. *Euphorbia pilosula* Engelm.; Boiss. in DC. Prodr. $15^2$: 39. 1866.

**Chamaesyce Preslii** (Guss.) Arth. *Euphorbia Preslii* Guss. Fl. S c. Prodr. **1**: 539. 1827.

**Chamaesyce potosina** (Fernald) Arth. *Euphorbia potosina* Fernald, Proc. Am. Acad. **36**: 495. 1901.

**Poinsettia strigosa** (Hook. & Arn.) Arth. *Euphorbia strigosa* Hook. & Arn. Bot. Beech. Voy. 310. 1837.

**Zygophyllidium biforme** (S. Wats.) Arth. *Euphorbia biformis* S. Wats. Proc. Am. Acad. **18**: 151. 1883.

As the three species, *C. Preslii*, *C. hypericifolia* and *C. nutans*, are usually grouped in current literature under one name, and differential descriptions are not available, Dr. Millspaugh at my request has supplied the following key.

Inflorescence glomerate.
Leaves obtusely serrate, long-pilose at base; seeds black or blackish. *C. Preslii.*
Leaves sharply serrate, not long-pilose at base; seeds red or reddish. *C. hypericifolia.*
Inflorescence solitary. *C. nutans.*

The first two species occur throughout the United States and Canada, the last species does not occur in the United States or Canada, but is found in the West Indies and Mexico.

PURDUE UNIVERSITY,
LAFAYETTE, INDIANA

## ANOTHER RESPIRATION EXPERIMENT

BY JEAN BROADHURST

For two years we have been using the following device for showing that green plants give out $CO_2$. Many methods have already been described; this is added only because it is so easily put up and because the contrast with the control is most marked. An air-tight joint made with water is more certain than when made with vaseline, etc.; it is also less "mussy."

A dish, *A*, is partly filled with water. In it are placed a glass vessel for lime (or barium) water, *B*, supported on any solid support, *C*, to raise it above the water in *A*. A leaf (geranium) may be placed over *B* with the petiole extending into the water

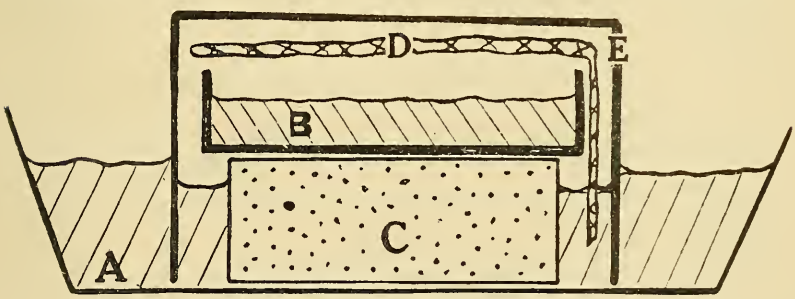


FIG. 1.—*A*, a dish or pan containing water for making an air-tight joint around *E*.
*B*, glass containing lime-water.
*C*, support.
*D*, a geranium leaf.
*E*, a glass dish enclosing *D* and *B*.

in *A*. (The petiole is, of course, not necessary, but students seem to feel that the conditions are more normal when the petiole has access to water in this way.) Over all is inverted a crystallizing dish, *E*, which should be but slightly wider in diameter than